

Revision of the genus *Chelotrupes* Jekel, 1866 n. stat. (Insecta, Coleoptera, Geotrupidae)

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KEY WORDS

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Coleoptera,
Geotrupidae,
Chelotrupes,
Typhaeus,
new combinations,
neotype,
lectotype,
bionomics.

ABSTRACT

Chelotrupes Jekel, 1866 is elevated to a valid genus and *C. matutinalis* (Baudi, 1870) n. comb. is resurrected as a valid species. The neotype of *C. biostius* (Gené, 1836) n. comb. as well as the lectotypes of *C. matutinalis* n. comb. and *C. momus* (Olivier, 1789) n. comb. are designated. Complete illustrations are given for *C. matutinalis* n. comb. as well as for *C. biostius* n. comb. and *C. momus* n. comb.

RÉSUMÉ

Revision du genre Chelotrupes Jekel, 1866 n. stat. (Insecta, Coleoptera, Geotrupidae).

Chelotrupes Jekel, 1866 est traité comme genre valide et *C. matutinalis* (Baudi, 1870) n. comb. est considéré comme espèce valide. Le néotype de *C. biostius* (Gené, 1836) n. comb. et les lectotypes de *C. matutinalis* n. comb. et *C. momus* (Olivier, 1789) n. comb. sont désignés. Les caractères morpho-anatomiques de *C. matutinalis* n. comb., *C. biostius* n. comb. et de *C. momus* n. comb. sont illustrés.

MOTS CLÉS

Insecta,
Coleoptera,
Geotrupidae,
Chelotrupes,
Typhaeus,
nouvelles combinaisons,
néotype,
lectotype,
bionomie.

INTRODUCTION

The genus-group taxon *Chelotrupes* Jekel, 1866 was described as subgenus of *Geotrupes* Latreille, 1796, but in most of pertinent literature it is considered as a synonym of several genera (*Geotrupes*, *Ceratophyus* Fischer de Waldheim, 1824, *Typhaeus* Leach, 1815) or often as a subgenus of doubtful validity.

Since the aim of this work is only to settle the taxonomy of known entities belonging to *Chelotrupes* and because the Iberian Peninsula populations, at present under revision (Branco pers. comm.), seem to be constituted by different species, a phylogenetical analysis is deemed premature. Moreover such an analysis should encompass all taxa of Chromogeotrupini Zunino, 1984. Anyway, from a phenetic systematics viewpoint, since all species belonging to *Chelotrupes* are flightless whereas all those belonging to *Typhaeus* are winged, we deem that this main peculiarity justify by itself the upgrading of *Chelotrupes* to genus rank.

Chelotrupes belongs to Chromogeotrupini, a tribe characterised, in males, by the pronotum with central and lateral hornlike apophyses projected forward, by the aedeagus with ventral lobes but without dorsal lobes at caudal margin, basal foramen wide and paramera – at least in European species – symmetrical, and, in females, by the pronotum with anterior angles very distinct, protruding forwardly or outwardly beyond the anterior margin, and by the bursa copulatrix simple and symmetrical.

MATERIAL AND METHODS

ABBREVIATIONS

The material examined is preserved in the following public or private collections:

| | |
|-----------|---|
| coll. CM | C. Meloni collection, Cagliari; |
| coll. MD | Dellacasa collection, Genova; |
| coll. PL | P. Leo collection, Cagliari; |
| coll. RP | R. Pittino collection, Milano; |
| coll. SZ | S. Ziani collection, Meldola, Forlì; |
| EAUSS | Dipartimento di Protezione delle Piante, sezione di Entomologia Agraria, Università degli Studi, Sassari; |
| MCSNG | Museo Civico di Storia Naturale "G. Doria", general collection, Genova; |
| MCSNG-BC | Museo Civico di Storia Naturale "G. Doria", Binaghi collection, Genova; |
| MCSNG-DC | Museo Civico di Storia Naturale "G. Doria", Dodero collection, Genova; |
| MCSNG-MC | Museo Civico di Storia Naturale "G. Doria", Mancini collection, Genova; |
| MCSNG-PC | Museo Civico di Storia Naturale "G. Doria", Pierotti collection, Genova; |
| MCSNG-SC | Museo Civico di Storia Naturale "G. Doria", Solari collection, Genova; |
| MCSNG-SIC | Museo Civico di Storia Naturale "G. Doria", Simonis collection, Genova; |
| MCSNM-GC | Museo Civico di Storia Naturale di Milano, general collection; |
| MCSNM-MC | Museo Civico di Storia Naturale di Milano, Mariani collection; |
| MNHN | Muséum national d'Histoire naturelle, Paris; |
| MRSNT | Museo Regionale di Scienze Naturali, Torino; |
| MSNTC | Centro Interdipartimentale, Museo di Storia Naturale e del Territorio, Università di Pisa, Calci, Pisa. |

SYSTEMATICS

Tribe CHROMOGEOTRUPINI Zunino, 1984

In the western Palaearctic fauna, only two genera belong to Chromogeotrupini (Löbl *et al.* 2006) and they can be keyed as follows.

KEY TO THE GENERA OF WESTERN PALEARCTIC CHROMOGEOTRUPINI ZUNINO, 1984

- Second segment of antennae globous, slightly longer than wide; head, in males, feebly narrowed and feebly elongate posteriorly; base of pronotum strongly sinuate; scutellum triangularly elongate; elytra not fused (winged species) with striae deep and intervals convex *Typhaeus*
- Second segment of antennae cylindrical, distinctly longer than wide; head, in males, strongly narrowed and very elongate posteriorly; base of pronotum not or, at most, faintly sinuate; scutellum triangularly transverse; elytra fused (flightless species) with striae fine, sometimes obsolete, and intervals flat *Chelotrupes*

Genus *Chelotrupes* Jekel, 1866 n. stat.

Chelotrupes Jekel, 1866: 549 (as subgenus of *Geotrupes*).

Ceratophyus (*Chelotrupes*) — Reitter 1893: 8. — Porta 1932: 401.

Typhaeus (*Chelotrupes*) — Boucomont 1912: 22. — Luigioni 1929: 390. — Winkler 1929: 1036. — Báguena Corella 1967: 260. — Carpaneto & Piattella 1995: 4. — Martín-Piera & López-Colón 2000: 122.

TYPE SPECIES. — *Scarabaeus momus* Fabricius, 1792 (junior homonym and synonym of *Scarabaeus momus* Olivier, 1789) (original designation).

DISTRIBUTION. — Sardinia, southwestern Iberian Peninsula

DIAGNOSIS. — Species with joined elytral sutural margin (flightless species), length 10.0–22.0 mm, glabrous or almost glabrous, blackish, entirely shiny, sometimes with metallic shine or with elytra dull. Head rhomboidal, strongly narrowed and elongate posteriorly; epistoma with median longitudinal gibbosity more or less elevated and more or less coarsely, diffusely punctate; clypeus subtriangular with anterior angles rounded, finely margined, the edge ciliate, distally upturned; genal sutures cariniform,

usually acutely protruded laterally beyond clypeal margin; genae widely rounded, densely elongately ciliate; front sparsely punctate or smooth; second antennal segment cylindrical, distinctly longer than wide, the club oblong, rather slender, with the median segment as large as the others. Pronotum strongly transverse, moderately convex, at sides with an antero-median rounded foveola more or less deep; sides more or less feebly arcuate, more or less widely flattened, thinly margined, the edge ciliate; hind angles rounded, base margined, not or faintly sinuate. Scutellum triangularly more or less broadly transverse. Elytra short or very short, at most two times longer than the pronotal length; truncate at base, strongly convex, flattened laterally before the epipleural carina; the latter glabrous or almost sparsely ciliate; humeral callus more or less strongly gibbous; striae fine, often obsolete; very superficially, usually almost indistinctly punctate; intervals flat, not punctate, smooth or with feeble transverse rugulae. Fore tibiae denticulate at outer margin; the apical tooth simple. Middle tibiae with four transverse carinae on outer face. Hind tibiae with five transverse carinae on outer face. Sexual dimorphism shown in males mainly by the exceptionally different shape of pronotum and by strongly different punctuation of epistoma.

BIONOMICS. — Flightless telocoprid species present all year round and distributed from sea level to high hills.

KEY TO THE SPECIES OF *CHELOTRUPES* JEKEL, 1866

1. Pronotum, in males, with antero-lateral hornlike apophyses anteriorly projected from above the anterior angles (Fig. 1A); pronotum, in females anteriorly truncate (Fig. 1I); epistoma glabrous in both sexes; scutellum subregularly tringular (Fig. 1L). Shiny black. Length 10.0–21.0 mm. Balearic Islands?, southern Spain, central and southern Portugal *C. momus* n. comb.
- Pronotum, in males, with antero-lateral hornlike apophyses projected anteriorly from the anterior angles (Fig. 1D, E), pronotum, in females, anteriorly deeply excavate (Fig. 1G, H); epistoma glabrous in males, pubescent on disc in females; scutellum broadly transverse (Fig. 1J, K) 2
2. Upper face entirely with metallic shine; first segment of hind tarsi usually as long as the following three combined; pronotum, in males, with antero-lateral hornlike apophyses straight, subparallel, only faintly inwardly curved apically (Fig. 1D), the central one upturned; pronotum, in females, smooth on disc, moderately irregularly punctate on sides, with anterior angles obtusely rounded and anteriorly projected (Fig. 1G). Blackish. Length 13.5–26.0 mm. Sardinia *C. biostius* n. comb.
- Pronotum with metallic shine, elytra dull; first segment of hind tarsi usually as long as the following two combined; pronotum, in males, with antero-lateral hornlike apophyses curved and inwardly convergent (Fig. 1E), the central one straightly anteriorly projected; pronotum, in females, sparsely punctate on disc, coarsely densely punctate on sides, with anterior angles subdenticulate and outwardly protruding (Fig. 1H). Blackish. Length 11.0–20.0 mm. Sardinia *C. matutinalis* n. comb.

Chelotrupes hiostius (Gené, 1836) n. comb.
(Figs 1A, D, G, J; 2A)

Geotrupes hiostius Gené, 1836: 187. — Marseul 1867: 54. — Harold 1869: 1082. — Bargagli 1872: 283. — Bertolini 1899: 62; 1904: 62.

Ceratophyus hiostius — Sturm 1843: 113.

Geotrupes (Minotaurus) hiostius — Marseul 1863: 122. — Reitter 1883: 97.

Geotrupes (Chelotrupes) hiostius — Jekel 1866: 550.

Geotrupes (Typhoeus) hiostius — Reitter 1891: 184.

Ceratophyus (Minotaurus) hiostius — Reitter 1893: 9.

Ceratophyus (Typhoeus) hiostius — Reitter 1906: 725.

Typhoeus (Chelotrupes) hiostius — Boucomont 1912: 22. — Luigioni 1929: 390. — Winkler 1929: 1036. — Crovetti 1970: 235. — Carpaneto & Piattella 1995: 4.

Ceratophyus (Chelotrupes) hiostius — Porta 1932: 401.

Typhoeus hiostius — Baraud 1992: 49.

TYPE MATERIAL. — 1 ♂ neotype (here designated) (MRSNT), bearing the following labels: 1) yellow, printed: “1 / 37”; 2) white, printed: “Sard[inia].”; 3) red, printed: “*Geotrupes / hiostius /* Gené, 1836 / NEOTYPUS / Des. Dellacasa, 2005”.

TYPE LOCALITY. — Sardinia, Italy.

ETYMOLOGY. — Named in honour of Hiostius [Hostius], son of Ampsicora, hero of Sardinian resistance to Roman invasion.

MATERIAL EXAMINED. — **Sardinia.** Sard. [Sardinia], 1 ex. (MRSNT). — Sardegna, 2 ex. (MCSNG-BC). — Sardinia, I.1837, 1 ex. (MSNTC). — Sardinia, leg. Damry, 3 ex. (MNHN).

Cagliari province, 7-fratelli, leg. U. Lostia, 1 ex. (MCSNG-DC).

Carbonia-Iglesias province, Carloforte, leg. A. Dodero, 3 ex. (MCSNG-MC); 1 ex. (MNHN). — *Idem*, 27.IV.1902, leg. A. Dodero, 9 ex. (MCSNG-DC). — *Idem*, 27.IV.1902, leg. A. Dodero, 3 ex. (MCSNG-BC). — *Idem*, 20.V.1892, leg. A. Dodero, 3 ex. (MCSNG-DC). — Sant'Anna Arresi, Cala Sa Barracca (o Portu Su Trigu), 5-48 m, 3.XII.1998, leg. C. Meloni, 1 ex. (coll. CM). — Spiaggia di Portixeddu (Fluminimaggiore-Buggeru), 17.I.1984, leg. P. Leo, 1 ex. (coll. PL). — *Idem*, 7.II.1984, leg. P. Leo, 1 ex. (coll. PL).

Medio Campidano province, Arbus, loc. Piscinas di Ingurtosu, 5.III.2001, leg. Lisa, 3 ex. (coll. SZ). — Costa Verde, Marina di Arbus dint., 39°33'51.0"N, 08°27'48.6"E,

50 m, 13.III.2005, leg. M. Dellacasa & C. Fresi, 8 ex. (coll. MD). — *Idem*, 1.X.2005, leg. M. Dellacasa & C. Fresi, 1 ex. (coll. MD). — *Idem*, 29.X.2005, leg. M. Dellacasa & C. Fresi, 13 ex. (coll. MD). — Duna di Is Arenas-s'Acqua e s'Ollastu (tra Punta s'Aschivoni e Torre di Flumentorgiu), 11.XI.1993, leg. P. Leo, 2 ex. (coll. PL). — Giara di Gesturi, 30.VI.1987, leg. M. Arnone, 2 ex. (MCSNG). — Marina di Arbus, 26.IV.1995, leg. P. Leo, 1 ex. (coll. MD). — *Idem*, 26.IV.1995, leg. P. Leo, 11 ex. (coll. SZ). — Marina di Arbus, foce Rio Piscinas, 26.IV.1995, leg. P. Leo, 8 ex. (coll. PL). — *Idem*, 4.V.1999, leg. P. Leo, 19 ex. (coll. PL). — *Idem*, 19.X.1979, leg. L. & R. Pittino, 6 ex. (coll. RP). — *Idem*, 24.X.1994, leg. P. Leo, 4 ex. (coll. PL). — *Idem*, 8/17.XI.2002, leg. P. Leo, 362 ex. (coll. PL).

Nuoro province, Macomer, Stagnu di Bara, 660 m, 25.III.1979, leg. C. Meloni, 1 ex. (coll. SZ).

Ogliastra province, Villanova Strisaili, 29.IV.1872, leg. R. Gestro, 1 ex. (MCSNG).

Oristano province, Monte Arci, 6.XII.1983, leg. Fancello, 1 ex. (MCSNG). — Oristano, Monte Ferru, 350 m, 30.IV.1979, leg. S. Riese, 2 ex. (MCSNG). — Oristano, Pen. del Sinis, 26.IV.1978, leg. S. Riese, 2 ex. (MCSNG). — San Giovanni di Sinis, 17.XI.1988, leg. C. Meloni, 1 ex. (coll. SZ). — *Idem*, 21.XI.1986, leg. C. Meloni, 3 ex. (coll. SZ).

DISTRIBUTION. — Known only from Sardinia (Fig. 3). We examined one specimen in MNHN labelled “Grèce”, the locality needs to be confirmed.

BIONOMICS. — Flightless telocoprid species present all year round, distributed from the sea level to high hills.

DESCRIPTION

Length 13.5-26.0 mm, very stout, strongly convex, almost glabrous, upper face entirely with metallic shine. Blackish, antennae and legs black. Head with epistoma broadly rhomboidal, with median longitudinal gibbosity more or less raised and coarsely, densely punctate; clypeus broadly triangular, widely rounded at anterior angle, very thinly margined, the edge almost sparsely ciliate and distinctly raised distally; genal sutures sharply cariniform, strongly raised; genae widely rounded; front smooth or sparsely punctate on disc, distinctly punctate laterally. Pronotum strongly transverse, moderately convex, with deep antero-median rounded foveola on sides; the latter arcuate, thinly margined, the edge almost densely ciliate; hind angles widely rounded; base thinly margined, slightly inwardly sinuate. Scutellum broadly triangular, slightly grooved at middle. Elytra very short, strongly

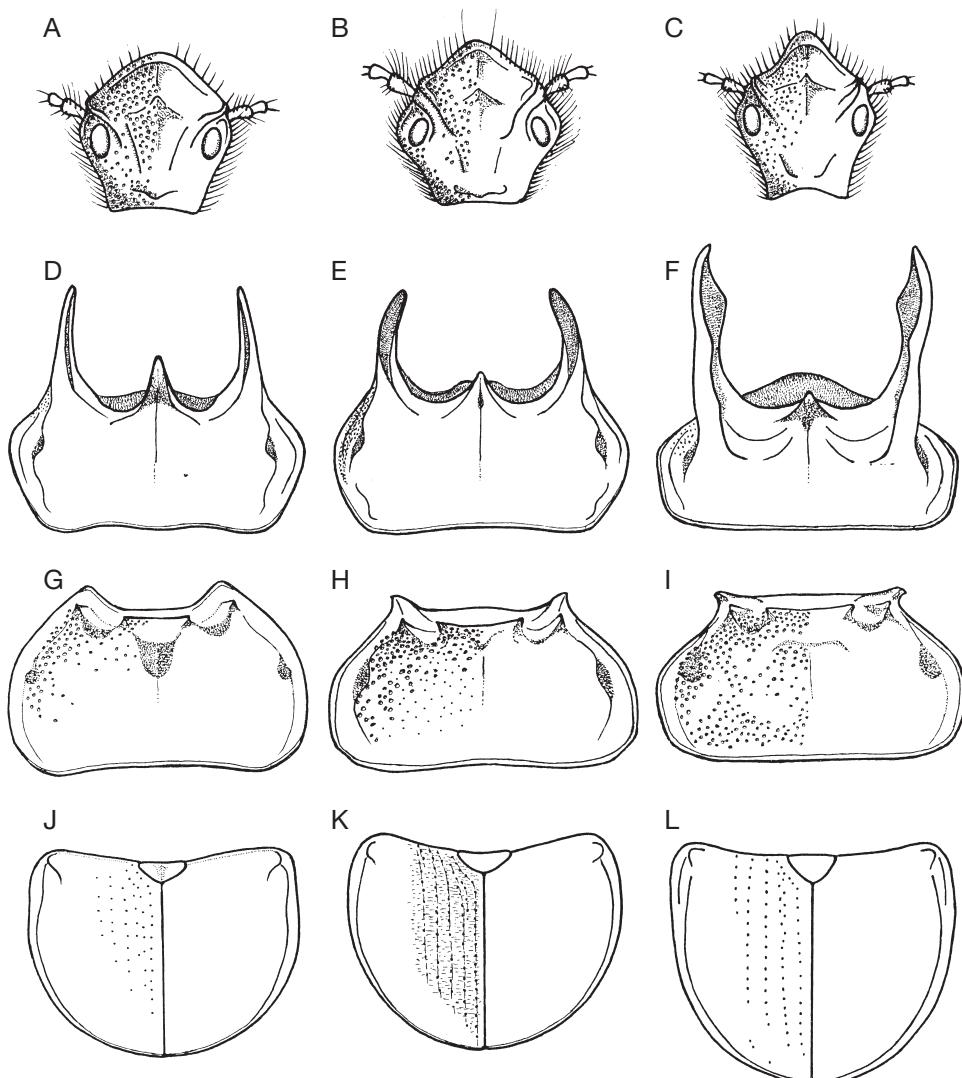


FIG. 1. — **A-C**, heads; **A**, *Chelotrupes hiostius* (Gené, 1836) n. comb.; **B**, *C. matutinalis* (Baudi, 1870) n. comb.; **C**, *C. momus* (Olivier, 1789) n. comb.; **D-F**, pronotum of the male; **D**, *C. hiostius* n. comb.; **E**, *C. matutinalis* n. comb.; **F**, *C. momus* n. comb.; **G-I**, pronotum of the female; **G**, *C. hiostius* n. comb.; **H**, *C. matutinalis* n. comb.; **I**, *C. momus* n. comb.; **J-L**, elytra; **J**, *C. hiostius* n. comb.; **K**, *C. matutinalis* n. comb.; **L**, *C. momus* n. comb.

convex, narrowly flattened before the epipleural carina; the latter sparsely and almost elongately ciliate; humeral callus strongly gibbous; striae very superficial, nearly obsolete, almost imperceptibly punctate; intervals flat, smooth. Fore tibiae apical spur distinctly curved apically. First segment of hind tarsi as long as following three combined.

Male: epistoma glabrous, with feeble median longitudinal gibbosity, regularly punctate on disc, punctuation distally more coarse and subrugose; pronotum laterally with few very fine punctures toward front angles, anteriorly with three hornlike apophyses, the lateral ones straight, subparallel, somewhat curved apically only, narrowly rugose

from apex almost to base, anteriorly projected from the anterior angles; the central apophysis almost elongate, acuminate, distinctly upturned; aedeagus illustrated on Figure 2A.

Female: epistoma shortly pubescent on disc, with median longitudinal gibbosity subtuberculiform at top, confusedly, coarsely, granulose punctate; pronotum irregularly moderately coarsely punctate on sides, smooth on disc; strongly excavate anteriorly; front angles very distinct, obtusely rounded, anteriorly projected, not outwardly curved; at each side foveolate and with an outer tooth moderately raised; antero-median carina short, distinctly raised.

REMARKS

Horn & Kahle (1935) as well as Conci (1969) reported that the Gené's Coleoptera from Sardinia were preserved in the Zoological Museum of Turin University then aggregated to the "general collection" of Museo regionale di Scienze naturali of Turin. Checking the Geotrupidae material at present stored in this collection, we have not found any specimen of *Chelotrupes hiostius* n. comb. In the P. Savi's collection of the Museo di Storia Naturale e del Territorio of Pisa University are present several specimens of Gené's collection but no specimens of *C. hiostius* n. comb. can be found. Since the Gené type material has to be considered lost, we have designated as neotype a specimen from the Baudi collection. In the original description Gené recorded as type locality "in viis atque in sabuletis frequentissimus, praesertim in peninsula di Sant'Antioco, m. aprilii". Notwithstanding the specimens preserved in Baudi collection bear a label reporting "Sard." only, we have chosen among them the neotype because they were utilized by Baudi when describing his species *Geotrupes matutinalis* for discriminating it from the taxon of Gené.

Chelotrupes matutinalis (Baudi, 1870) n. comb. (Figs 1B, E, H, K; 2B)

Geotrupes (Minotaurus) matutinalis Baudi, 1870: 70. — Reitter 1883: 97.

Geotrupes matutinalis — Bargagli 1872: 283. — Reitter 1893: 9 (as synonym of *hiostius*). — Bertolini 1899: 62; 1904: 62. — Boucomont 1912: 22 (as synonym of

hiostius). — Crovetti 1970: 235 (*idem*).

Geotrupes (Typhoeus) matutinalis — Reitter 1891: 184.

Ceratophyus (Typhoeus) hiostius var. *matutinalis* — Reitter 1906: 725.

Typhoeus (Chelotrupes) hiostius var. *matutinalis* — Luigioni 1929: 390.

Typhoeus (Chelotrupes) matutinalis — Winkler 1929: 1036 (as synonym of *hiostius*).

Ceratophyus (Chelotrupes) hiostius ab. *matutinalis* — Porta 1932: 401.

Typhoeus hiostius ab. *matutinalis* — Baraud 1992: 49.

TYPE MATERIAL. — Lectotype (here designated): 1 ♂ (MRSNT), bearing the following labels: 1) yellow, printed: "1 / 35"; 2) white, printed: "Sard[inia]. / (Monte Santo, / Bonnanaro vic. / colline interne)"; 3) red, printed: "*Geotrupes* / *matutinalis* / Baudi, 1870 / LECTOTYPUS / Des. Dellacasa, 2005".

Paralectotype: same data as lectotype 1 ♀ (MRSNT).

TYPE LOCALITY. — Cantoniera di Monte Santo, Bonnanaro [Sassari, Sardinia]. In the original description Baudi recorded as type locality "Sardiniae interioris collibus". In the manuscript catalogue (1891) of the Baudi collection preserved in Turin Museum we have found the more detailed locality that we deem should be considered the true type locality.

MATERIAL EXAMINED. — **Sardinia.** Sardegna, 1 ex. (MCSNG-MC); 2 ex. (MCSNG-BC). — *Idem*, leg. D. Ghiliani, 2 ex. (MCSNG). — *Idem*, leg. U. Lostia, 1 ex. (MCSNG-MC). — *Idem*, IV.1891, leg. A. Dodero, 3 ex. (MCSNG). — Sardinia, 4 ex. (MRSNT). — *Idem*, leg. U. Lostia, 3 ex. (MCSNG-MC); 1 ex. (MNHN). — *Idem*, leg. Raymond, 1 ex. (MNHN). — *Idem*, leg. Damry, 3 ex. (MNHN). — *Idem*, leg. A. Otto, 1 ex. (MNHN). Cagliari province, Burcei, 4.V.1985, leg. P. Leo, 1 ex. (coll. PL). — Campuomu, I.1974, leg. M. De Luca, 3 ex. (MCSNM-MC); 2 ex. (coll. RP). — *Idem*, II.1975, leg. M. De Luca, 1 ex. (MCSNM-MC); 1 ex. (coll. RP). — *Idem*, III.1973, leg. M. De Luca, 2 ex. (MCSNM-MC); 1 ex. (coll. RP). — *Idem*, IV.1972, leg. M. De Luca, 1 ex. (MCSNM-MC). — *Idem*, 19.IV.1973, leg. Franzini, 3 ex. (MCSNM-MC). — *Idem*, 14.V.1975, leg. M. De Luca, 2 ex. (coll. RP). — *Idem*, 22.V.1973, leg. M. De Luca, 2 ex. (MCSNM-MC). — Monti dei Sette Fratelli, leg. U. Lostia, 2 ex. (MCSNG-SC). — *Idem*, 10.IX.1985, 1 ex. (EAUSS). — Monti dei Sette Fratelli, Campuomu, 25.IV.1984, leg. P. Leo, 3 ex. (coll. PL). — *Idem*, 350 m, 4.V.1985, leg. C. Meloni, 2 ex. (coll. CM). — Monti dei Sette Fratelli, Monte Cresia, 7.II.1982, leg. P. Leo, 1 ex. (coll. PL). — *Idem*, 650-700 m, 7.II.1982, leg. C.

Meloni, 1 ex. (coll. CM). — *Idem*, 2.V.1982, leg. C. Meloni, 3 ex. (coll. CM). — *Idem*, 750 m, 11.III.1986, leg. C. Meloni, 1 ex. (coll. SZ). — Monti dei Sette Fratelli, Monte Eccas, 700-750 m, 3.II.1997, leg. C. Meloni, 4 ex. (coll. CM). — *Idem*, 22.III.2001, leg. C. Meloni, 3 ex. (coll. CM).

Carbonia-Iglesias province, Calasetta, 2.I.1962, leg. A. Crovetti, 9 ex. (coll. MD). — *Idem*, 11.I.1962, 14 ex. (EAUSS). — *Idem*, 11.I.1962, 3 ex. (MCSNG). — Carbonia, Monte Sirai, 22.XII.1990, leg. P. Leo, 4 ex. (coll. PL). — Carloforte, 17.IV.1912, leg. A. Dodero, 1 ex. (MCSNG-DC). — Iglesias, loc. Campo Pisano, 25.X.1979, leg. C. Meloni, 2 ex. (coll. CM). — *Idem*, 9.XII.1978, leg. C. Meloni, 3 ex. (coll. CM). — *Idem*, 17.XII.1978, leg. C. Meloni, 7 ex. (coll. CM). — Iglesias, Monti de Simoni, 250-260 m, 21.IV.2003, leg. C. Meloni, 3 ex. (coll. CM). — Isola di San Pietro, 9.III.1980, leg. P. Leo, 1 ex. (coll. MD). — Isola di San Pietro, Cala Lunga, 24.II.1980, leg. C. Meloni, 2 ex. (coll. CM). — *Idem*, 29.II.1976, leg. P. Leo, 1 ex. (coll. CM). — Isola di San Pietro, dint. Carloforte, III.1976, leg. P. Leo, 1 ex. (coll. CM). — Isola di San Pietro, La Punta, 29.II.1976, leg. P. Leo, 2 ex. (coll. PL). — *Idem*, 9.III.1980, leg. P. Leo, 1 ex. (coll. PL). — *Idem*, 11.III.1982, leg. P. Leo, 1 ex. (coll. PL). — Isola Sant'Antioco, Punta Maggiore, 18.IV.1982, leg. P. Leo, 1 ex. (coll. PL). — *Idem*, 12.XI.1978, leg. P. Leo, 2 ex. (coll. PL). — Sant'Antioco, 15.XII.1961, 2 ex. (MNHN). — Porto Scuso, ex Musaeo Harold, 1 ex., (MNHN). — Portoscuoso, loc. Paringianu, 14.III.1979, leg. C. Meloni, 7 ex. (coll. CM). — Sant'Anna Arresi, Cala Sa Barracca (o Portu su Trigu), 5-48 m, 6.I.1999, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 18.XI.1998, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 3.XII.1998, leg. C. Meloni, 1 ex. (coll. CM).

Medio Campidano province, Arbus, foce Rio Piscinas, 3.VI.1991, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 19.X.1979, leg. L. & R. Pittino, 7 ex. (coll. RP). — Arbus, Passo Biddérdi, 492 m, 2.IV.1995, leg. C. Meloni, 2 ex. (coll. CM). — *Idem*, 17.IV.1993, leg. P. Leo, 1 ex. (coll. PL). — Costa Verde, Marina di Arbus dint., 39°33'51.0"N, 08°27'48.6"E, 50 m, 13.III.2005, leg. M. Dellacasa & C. Fresi, 1 ex. (coll. MD). — Flumentorgiu, V.1894, leg. Solari, 5 ex. (MCSNM-GC). — Giara di Gesturi, 4.IV.1987, leg. P. Leo, 3 ex. (coll. PL). — *Idem*, 22.III.1994, leg. P. Leo, 7 ex. (coll. PL). — *Idem*, 4.V.1978, leg. G. Dellacasa, 1 ex. (coll. MD). — *Idem*, 19.V.1955, leg. Mariani, 2 ex. (MCSNM-MC). — *Idem*, 30.VI.1987, leg. M. Arnone, 2 ex. (MCSNG). — *Idem*, 580 m, 4.V.1978, leg. R. Poggi, (sotto pietra con sterco di coniglio selv.), 1 ex. (MCSNG). — *Idem*, 580 m, 4.V.1978, leg. R. Poggi, 1 ex. (MCSNG). — *Idem*, Paùli Majori di Tulli, 570 m, 9.II.1992, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 4.IV.1987, leg. C. Meloni, 2 ex. (coll. CM). — Pabillonis, loc. Is Arenas, 50-60 m, 13.I.1980, leg. P. Leo 1 ex. (coll. PL). — *Idem*, 16.XII.1979, leg. C. Meloni, 2 ex. (coll. CM). — *Idem*, 30.XII.1979, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 30.XII.1979, leg. P. Leo, 2 ex. (coll. PL).

Nuoro province, Macomer, Altipiano di Campeda, 24.V.1980, leg. M. E. Francisko, 1 ex. (MCSNG). — *Idem*, 25.V.1980, leg. M. E. Francisko, 1 ex. (coll. MD). — Macomer, Sa Serra, 31.III.1996, leg. C. Meloni, 1 ex. (coll. PL). — MC. S. Antonio pr. Macomer, IV.1909, leg. Solari, 2 ex. (MCSNM-GC). — Monte S. Antonio PR. Macomer, 17.IV.1909, leg. A. Dodero, 1 ex. (MCSNG-DC). — *Idem*, 30.IV.1908, leg. A. Dodero, 1 ex. (MCSNG-DC). — Macomer, Stagno di Bara, 600 m, 18.III.1979, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 25.III.1979, leg. C. Meloni, 2 ex. (coll. CM). — *Idem*, 27.IV.1980, leg. S. Riese, 1 ex. (MNHN). — *Idem*, 9.X.1981, leg. C. Meloni, 1 ex. (coll. CM).

Oristano province, Cabras, 18.V.1873, leg. R. Gestro, 2 ex. (MCSNG). — Capo Mannu, 30.X.1977, leg. H. Pierotti, 1 ex. (MCSNG-PC). — Capo Tharros, 22.XII.1972, leg. G. Sabatinelli, 2 ex. (MNHN). — Is Arenas, 13.I.1980, leg. P. Leo, 2 ex. (MCSNM-GC). — *Idem*, VI.1955, leg. Ceresa, 1 ex. (MCSNM-GC). — *Idem*, 30.XII.1979, leg. P. Leo, 1 ex. (coll. MD). — Is Arenas dint., Azienda Codreas, 40°03'01.9"N, 08°30'20.5"E, 50 m, 9-14.XI.2005, leg. M. Dellacasa & C. Fresi (pitfall trap baited with horse dung), 1 ex. (coll. MD). — Monte Arci, 6.XII.1983, leg. Fancello, 1 ex. (MCSNG). — Monte Arci, loc. Is Benas, 650-700 m, 20.I.2002, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 24.VI.1997, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 23.X.2003, leg. C. Meloni, 40 ex. (coll. CM). — M. Ferru, IV, leg. U. Lostia, 1 ex. (MCSNG-MC). — *Idem*, 2.V.1891, leg. A. Dodero, 1 ex. (MCSNG-BC). — *Idem*, 2.V.1891, leg. A. Dodero, 4 ex. (MCSNG-DC); 1 ex. (MNHN). — *Idem*, XI.1937, leg. U. Lostia, 1 ex. (MCSNG-MC). — Montiferru, Sa Roda Manna (Scano di Montiferro), 40°11'44.5"N, 08°38'23.2"E, 710 m, 9-15.XI.2005, leg. M. Dellacasa & C. Fresi (pitfall trap baited with sheep dung), 1 ex. (coll. MD). — *Idem*, 22-25.XI.2005, leg. M. Dellacasa & C. Fresi (pitfall trap baited with sheep dung), 1 ex. (coll. MD). — Morgongiori, 20.X.1990, leg. Melis, 2 ex. (MCSNG-SIC). — Oristano, 1 ex. (MCSNG). — *Idem*, leg. D. Lostia, 1 ex. (MCSNG). — *Idem*, 30.V.1959, 1 ex. (MCSNG). — Oristano, Penisola del Sinis, 26.IV.1979, leg. S. Riese, 2 ex. (MCSNG). — Oristano, San Giovanni di Sinis, V.1972, leg. C. Leonardi, 2 ex. (MCSNG-PC). — Penisola del Sinis, Is Arenas, 25.IV.1982, leg. P. Leo, 1 ex. (coll. PL). — Penisola del Sinis, Pauli Sergiola, 9.XI.1975, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 26.XII.1978, leg. C. Meloni, 2 ex. (coll. CM). — Penisola del Sinis, Sa Marigosa, 25.IV.1982, leg. P. Leo, 1 ex. (coll. PL). — San Giovanni di Sinis, V.1972, leg. C. Leonardi, 19 ex. (MCSNM-GC). — *Idem*, 6.V.1971, leg. C. Leonardi, 1 ex. (coll. RP). — *Idem*, 20.X.1979, leg. L. & R. Pittino, 13 ex. (coll. RP). — *Idem*, 21.X.1979, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 29.X.1977, leg. R. Pittino, 58 ex. (coll. RP). — *Idem*, 18.XI.1979, leg. C. Meloni, 4 ex.

(coll. CM); 1 ex. (MCSNG-SIC). — *Idem*, 21.XI.1986, leg. C. Meloni, 4 ex. (coll. MD). — *Idem*, 25.XI.1979, leg. P. Leo, 5 ex. (MCSNM-GC). — *Idem*, 25.XI.1979, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 28.XI.1976, leg. C. Meloni, 1 ex. (coll. CM). — *Idem*, 20.XII.1972, leg. G. Sabatinelli, 10 ex. (coll. RP). — Santa Caterina di Pittinuri (Cuglieri), 31.I.1982, leg. P. Leo, 1 ex. (coll. PL). — Seneghe, 3.V.1990, leg. S. Riese, 2 ex. (coll. MD). — Sinis, 21.V.1955, leg. Mariani, 4 ex. (MCSNM-MC). — *Idem*, Putzu Idu, 21-26.V.1974, leg. L. Briganti, 2 ex. (MCSNG). — Stagno di Mistras (Oristano), 9.XI.1975, leg. C. Meloni, 2 ex. (coll. PL). — *Idem*, 26.XI.1978, leg. C. Meloni, 1 ex. (coll. PL). — Tharros, 20.I.1962, leg. A. Crovetti, 1 ex. (coll. SZ). — *Idem*, 20.I.1962, leg. A. Crovetti, 5 ex. (coll. MD). — *Idem*, 28.I.1969, 1 ex. (EAUSS). — *Idem*, 2.V.1978, leg. R. Poggi, 2 ex. (MCSNG). — *Idem*, 4.V.1971, leg. C. Leonardi, 2 ex. (MCSNM-GC). — *Idem*, 5.V.1978, leg. G. Dellacasa, 1 ex. (coll. MD). — *Idem*, 1 ex. (MNHN). — *Idem*, VII.1900, 1 ex. (coll. MD). — *Idem*, 29.X.1977, leg. Verucchi, 36 ex. (MCSNM-MC). — *Idem*, 30.X.1977, leg. H. Pierotti, 59 ex. (MCSNG-PC). — Tharros-San Giovanni di Sinis, 25.XI.1979, leg. P. Leo, 8 ex. (coll. PL). — Uras, 1891, leg. A. Dodero, 2 ex. (MCSNG-DC). — *Idem*, 6 ex. (MNHN). — *Idem*, 25.IV.1891, leg. A. Dodero, 2 ex. (MCSNG-DC).

Olbia-Tempio province, Tempio, leg. Baudi, 1 ex. (MCSNG-MC). — *Idem*, leg. A. Dodero, 1 ex. (MCSNG-BC); 4 ex. (MCSNG-DC). — *Idem*, 7.IV.1902, leg. A. Dodero, 2 ex. (MCSNG-DC). — *Idem*, 27.V.1890, leg. A. Fiori, 1 ex. (MNHN).

Sassari province, Alghero, 4 ex. (MCSNG-MC); 1 ex. (MNHN). — *Idem*, leg. Crozet (ex. coll. Alzona), 2 ex. (MCSNM-GC). — *Idem*, X.1915, 1 ex. (MCSNM-MC); 1 ex. (MNHN). — Capo Caccia, III.1910, leg. A. Dodero, 2 ex. (MCSNG-BC). — *Idem*, 17.IV.1902, leg. A. Dodero, 4 ex. (MCSNG-DC). — *Idem*, 8.V.1887, leg. Baudi, 1 ex. (MNHN). — Chilivani, 3.VI.1953, leg. Mariani, 1 ex. (MCSNM-MC). — Monte Santo (Bonnanaro vic., colline interne), 4 ex. (MRSNT). — Pto. Torres, leg. Damry, 1 ex. (MNHN). — P. Argentiera, 22.V.1954, leg. De Biasi, 1 ex. (MCSNM-MC). — Punta Falcone, La Pelosa, Stintino, 2.V.1965, 1 ex. (male pronotum and elytra only) (EAUSS). — Sassari, leg. E. Moltoni, 1 ex. (MCSNG-MC); 2 ex. (coll. MD). — *Idem*, 1921, leg. E. Moltoni, 2 ex. (MCSNG-MC).

DISTRIBUTION. — Known only from Sardinia (Fig. 3). Maybe the records from Corsica of *Typhaeus typhoeus* (Linnaeus, 1758) mentioned by several authors (cf. Dellacasa 2004: 45) have to be referred to this taxon or to *Chelotrupes hiosius* n. comb. We studied also specimens preserved in Paris Museum coming from localities that need to be confirmed: Sicile, 2 ex.; *idem*, leg. Krichl., 2 ex.; Graecia, ex coll. Pic, patria falsa, det. J. Barraud, 1 ex.; Grece, 1 ex.; Balearic Is., ex Musaeo Bates 1892, 1 ex.

BIONOMICS. — Flightless telocerpid species that seems to prefer sandy soils with dung of rabbits, hares, and goats; present all year round, distributed from sea level to high hills.

DESCRIPTION

Length 11.0-20.0 mm, very stout, strongly convex, almost glabrous; head and pronotum with metallic shine, elytra opaque. Blackish, antennae and legs black. Head with epistoma broadly rhomboidal, with median longitudinal gibbosity more or less coarsely, densely punctate; clypeus subtriangular with anterior angle widely rounded, laterally feebly inwardly sinuate, thinly margined, the edge elongately ciliate and distally upturned; genal cariniform sutures strongly raised; genae widely rounded; front smooth or sparsely punctate on disc, distinctly punctate on sides. Pronotum strongly transverse, moderately convex, with feeble antero-median rounded foveola on sides; the latter arcuate, thinly margined, the edge almost densely ciliate; hind angles obtusely rounded; base thinly margined, not inwardly sinuate. Scutellum broadly triangular, almost flat, alutaceous. Elytra very short, strongly convex, narrowly flattened before the epipleural carina; the latter sparsely ciliate; humeral callus feebly gibbous; striae usually distinct and more or less strongly punctate; intervals flat, alutaceous, superficially transversely rugulose. Fore tibiae apical spur hooked apically. First segment of hind tarsi as long as following two combined.

Male: epistoma glabrous, with median longitudinal gibbosity feeble, almost smooth on disc, confusedly, rugosely punctate distally; pronotum laterally finely punctured; anteriorly with three horn-like apophyses, the lateral ones curved and inwardly convergent, subrugose almost to the base; the central gibbosity much smaller, regularly acuminate, straightly projected anteriorly; aedeagus illustrated on Figure 2B.

Female: epistome with median longitudinal gibbosity subtuberculiform at top, roughly punctate, with short pubescence on disc; pronotum irregularly punctate, punctuation very fine and sparse on disc, coarser and denser anteriorly mostly on sides, deeply excavate anteriorly, front angles very distinct, subdenticulate and outwardly curved; at each side

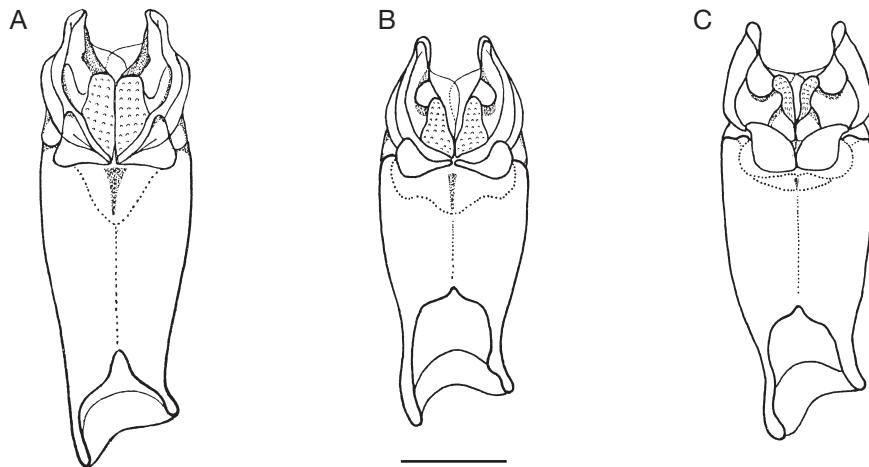


FIG. 2. — Aedeagus in dorsal view: **A**, *Chelotrupes hiosius* (Gené, 1836) n. comb., Costa Verde, Marina di Arbus dint., 39°33'51.0"N, 08°27'48.6"E; **B**, *C. matutinalis* (Baudi, 1870) n. comb., Costa Verde, Marina di Arbus dint., 39°33'51.0"N, 08°27'48.6"E; **C**, *C. momus* (Olivier, 1789) n. comb., Andalusia, Cadiz, Tarifa. Scale bar: 1 mm.

foveolate and with an outer tooth moderately raised; with a strong antero-median transverse carina.

REMARKS

The synonymy of *C. matutinalis* n. comb. versus *C. hiosius* n. comb. accepted in most of the pertinent literature, seems to be based on the Reitter's comment (1893: 9): "Auf kleine, schwarze Individuen, ohne metallischen Schein dürfte der *Geotr. matutinalis* Baudi, B. 1870. 70. begründet worden sein; die angegebenen Unterschiede sind durchaus keine spezifischen." Conversely the thorough study of numerous specimens allows us to conclude that this synonymy is incorrect; thus *Chelotrupes matutinalis* n. comb. is a valid species.

Chelotrupes momus (Olivier, 1789) n. comb. (Figs 1C, F, I, L; 2C)

Scarabaeus momus Olivier, 1789: 60. — Illiger 1800: 152; 1803: 208.

Scarabaeus momus — Fabricius 1792: 13.

Ceratophyus momus — Sturm 1843: 113.

Ceratophyus laevipennis Mulsant & Godard, 1855: 1. — Boucomont 1912: 22 (as synonym of *momus*).

Geotrupes (Minotauros) momus — Marseul 1863: 122. — Reitter 1883: 97.

Geotrupes (Minotauros) laevipennis — Marseul 1863: 122. — Reitter 1883: 97.

Ceratophyus (Chelotrupes) momus — Jekel 1866: 550.

Geotrupes momus — Marseul 1867: 54.

Geotrupes laevipennis — Marseul 1867: 54.

Geotrupes andalusiacus teste Deyrolle, 1869: 10. — Boucomont 1912: 22 (as synonym of *momus*).

Geotrupes (Typhoeus) momus — Reitter 1891: 184.

Geotrupes (Typhoeus) laevipennis — Reitter 1891: 184.

Ceratophyus (Minotauros) momus — Reitter 1893: 9.

Ceratophyus (Minotauros) momus var. *laevipennis* — Reitter 1893: 9.

Ceratophyus (Typhoeus) momus — Reitter 1906: 725.

Ceratophyus (Typhoeus) momus var. *laevipennis* — Reitter 1906: 725.

Ceratophyus (Typhoeus) momus var. *momooides* — Reitter 1906: 725.

Typhoeus (Chelotrupes) momus — Boucomont 1912: 22. — Winkler 1929: 1036. — Báguena Corella 1967: 260. — Martín-Piera & López-Colón 2000: 122.

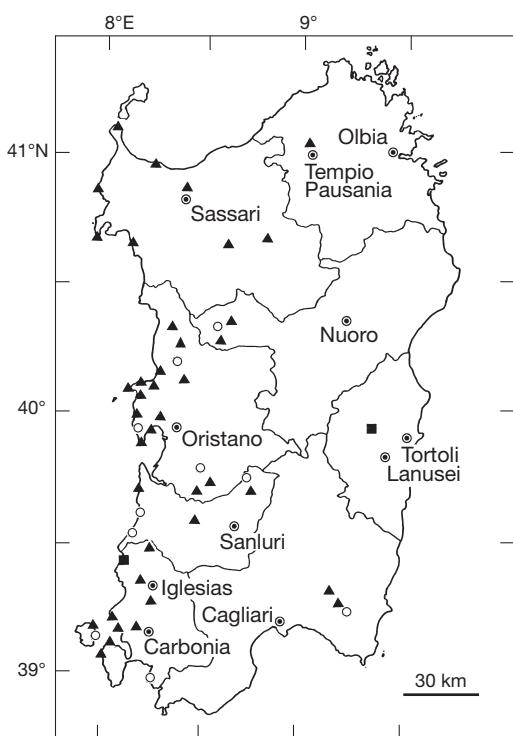


FIG. 3. — Distribution in Sardinia (Italy) of *Chelotrupes hiosius* n. comb. (■) and *C. matutinalis* n. comb. (▲). ○, sympatry of *C. hiosius* n. comb. and *C. matutinalis* n. comb.

Typhoeus momus — Barraud 1992: 49.

TYPE MATERIAL. — Lectotype (here designated): 1 ♂ (MNHN), bearing the following labels: 1) blue, handwritten: "Geotrupes momus / C. Olivier / Afr. aequin."; 2) red, printed: "Geotrupes momus / Olivier, 1789 / LECTOTYPUS / Des. Dellacasa 2005". Paralectotype: same data as lectotype, 1 ♀ (MNHN).

TYPE LOCALITY. — "Afr. aequin." [Africa aequinoctialis; Sierra Leone?]. Olivier (1789) and Fabricius (1792) recorded as "patria typica" of this taxon respectively "Sierra Leone" and "India orientalis", and Jekel (1866) "le Portugal (Algarves), l'Andalousie et la Barbarie occidentale". Conversely the species is known only from southwestern Iberian Peninsula.

ETYMOLOGY. — Momus is the Greek deity of mockery, faultfinding, scoff and unfair criticism.

MATERIAL EXAMINED. — Spain. Algeciras, leg. A Grouvelle, 1 ex. (MNHN). — *Idem*, 6.IV.1906, ex coll. Schramm, 2 ex. (MNHN). — *Idem*, 7.IV.1905, ex coll. Schramm,

6 ex. (MNHN). — Cadiz, 3 ex. (MNHN). — *Idem*, 1842, leg. Gilliani, 1 ex. (MNHN). — Cadiz, Puerto Galiz, 3-9. IV.1984, leg. J. Barraud, 11 ex. (MNHN). — Cadiz, Rota, 29.XI.1973, leg. J. Barraud, 1 ex. (MNHN). — Andalusia, El Rocio, Huelva, 14.IV.1986, leg. G. & E. Dellacasa, 1 ex. (coll. MD). — Andalusia, Facinas, 4.XII.1984, leg. G. & M. Dellacasa, 41 ex. (coll. MD). — Lag. de la Janda, IV.1918, leg. Brevil, 1 ex. (MNHN). — Prov. Sevilla, Villamanrique, 1-11.X.1960, leg. J. Barraud, 27 ex. (MNHN). — Andalusia, Tarifa, Cadiz, 3.XII.1984, leg. G. & M. Dellacasa, 2 ex. (coll. MD). — *Idem*, 7.XII.1984, leg. G. & M. Dellacasa, 20 ex. (coll. MD). — Cadiz, XI.1972, leg. A. J. Villarreal, 5 ex. (MCSNG-PC). Portugal. Algarve, env. de Faro, X.1970, leg. H. Coiffait, 2 ex. (MNHN). — Algarve, Moncique, ex Musaeo Harold, 4 ex. (MNHN). — *Idem*, ex coll. Bedel, 1 ex. (MNHN). — *Idem*, 2.IV.1967, leg. M. Coiffait, 1 ex. (MNHN). — *Idem*, Foia, 900 m, 20.IV.1982; leg. J. Barraud, 5 ex. (MNHN). — Algarve, Sta. Barbara de N., IV.1963, leg. M. Coiffait, 8 ex. (MNHN). — *Idem*, XII.1963, 2 ex. (MNHN). — Algarve, Tavira, 14-25.II.1965, leg. T. Branco (excr. humain), 5 ex. (MNHN). — Ribatejo, 16 km Sud Coruche, 3-9.IV.1984, leg. J. Barraud, 9 ex. (MNHN). — Ribatejo, 6 km N de Lavre, 29.III.1984, leg. J. Barraud, 2 ex. (MNHN). — Ribatejo, Monte da Barca, 2.IV.1984, leg. J. Barraud, 2 ex. (MNHN). — Ribatejo, Muge, 27-28.III.1984, leg. J. Barraud, 3 ex. (MNHN). — *Idem*, 6.IV.1981, leg. J. Barraud, 1 ex. (MNHN). — *Idem*, 7.IV.1986, Leg. G. & E. Dellacasa, 1 ex. (coll. MD).

DISTRIBUTION. — Known from southern Spain and Portugal (Ribatejo and Algarve). We have examined specimens preserved in the Paris Museum coming from localities that need to be confirmed: Maroc, ex coll. Boucomont, 3 ex.; Algérie, ex coll. Ernest André, 1914, 2 ex. The record from Ibiza, Balearic Islands (Crovetti 1970) needs to be confirmed too.

BIONOMICS. — Flightless telocoprid species utilizing several kinds of dung (sheep, horse, cow), particularly frequent in dung of rabbits (Sanchez-Piñero & Avila 1991), rarely in dung of wild boar (Hidalgo *et al.* 1998) and of lynx (Martín-Piera & López-Colón 2000), also in human excrement. Present all year round and distributed from sea level to high hills.

DESCRIPTION

Length 10.0-21.0 mm, moderately stout, strongly convex, shiny, glabrous. Black; antennae and legs blackish. Head with epistoma narrowly rhomboidal, glabrous in both sexes, with median longitudinal gibbosity moderately raised and more or less coarsely punctate; clypeus subtriangular, rounded at anterior angle, thinly margined, the edge sparsely ciliate

and distinctly upturned distally; genal sutures cariniform, strongly raised; genae widely rounded; front smooth on disc, moderately punctate laterally. Pronotum strongly transverse, moderately convex, with distinct antero-median rounded foveola on sides; latter feebly arcuate, thinly margined, the edge sparsely ciliate; hind angles widely rounded; base thinly margined, not sinuate. Scutellum subregularly triangular, almost convex. Elytra distinctly longer than wide, strongly convex, narrowly flattened before the epipleural carina; the latter glabrous; striae almost obsolete with nearly imperceptible punctures; intervals flat, smooth. Fore tibiae apical spur feebly sinuate. First segment of hind tarsi as long as following two combined.

Male: epistoma with median longitudinal gibbosity feeble, finely and very superficially punctate on disc, punctuation coarser distally; pronotum superficially punctate on sides toward the anterior angles, anteriorly with three hornlike apophyses; the lateral ones straight, anteriorly projecting from above the anterior angles, subparallel at outer margin and with distinctly raised longitudinal carina subtubercular form at middle and from this abruptly recumbent toward the inner margin that is sinuously widened inwardly, the groove distinctly rugulose; the central apophysis shortened, regularly acuminate, upturned; aedeagus illustrated on Figure 2C.

Female: epistoma with median longitudinal gibbosity distinctly tubercular at top, strongly, rugosely, confusedly punctate throughout; pronotum sparsely and superficially punctate on disc, punctuation irregular and more dense on sides, with antero-lateral angles dentiform, feebly projecting anteriorly and distinctly outwardly curved; at each side foveolate and with an outer tooth sharp and distinctly raised; with short strong antero-median transverse carina.

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